

CLAIMS

What is claimed is:

1. A method of modulating an immune response to a second antigen in an individual, comprising administering to the individual an immunomodulatory polynucleotide comprising an immunostimulatory sequence (ISS) and a first antigen, wherein the polynucleotide and first antigen are administered in an amount sufficient to modulate an immune response to the second antigen upon exposure to the second antigen.

2. The method of claim 1, wherein the first antigen administered in the absence of the second antigen, and exposure to the second antigen occurs concurrently with exposure to the first antigen.

3. The method of claim 1, wherein the immunomodulatory polynucleotide and first antigen are proximately associated.

4. The method of claim 3, wherein the immunomodulatory polynucleotide and first antigen are conjugated.

5. The method of claim 3, wherein the immunomodulatory polynucleotide and first antigen are proximately associated by a platform molecule.

6. The method of claim 3, wherein the immunomodulatory polynucleotide and first antigen are proximately associated by encapsulation.

7. The method of claim 1, wherein the immunomodulatory polynucleotide and first antigen are administered in an admixture.

8. The method of claim 1, wherein the ISS and first antigen are administered before the individual is exposed to the second antigen.

9. The method of claim 8, wherein the ISS and first antigen are administered less than about 10 days before exposure to the second antigen.

10. The method of claim 1, wherein the ISS and first antigen are administered upon exposure to second antigen.

~~11. The method of claim 1, wherein the immunomodulatory polynucleotide and first antigen are administered at a site in the individual which is the same as the site of exposure to the second antigen.~~

12. The method of claim 1, wherein the immunomodulatory polynucleotide and first antigen are administered at a site in the individual which is different from the site of exposure to the second antigen.

13. The method of claim 1, wherein the first antigen is an allergen.

14. The method of claim 1, wherein the first antigen is a conserved polypeptide of a virus.

15. The method of claim 14, wherein the conserved viral polypeptide is influenza nucleocapsid protein.

16. The method of claim 14, wherein the conserved viral polypeptide is human immunodeficiency virus (HIV) gag protein.

17. The method of claim 1, wherein the first antigen is a carrier molecule.

18. The method of claim 17, wherein the carrier molecule is diphtheria toxin mutant (CRM 197).

19. The method of claim 17, wherein the carrier molecule is diphtheria toxoid.

~~20. The method of claim 1, wherein the first antigen is associated with a carrier molecule.~~

~~21. The method of claim 1, wherein the immune response is modulated by stimulating a Th1 response to the second antigen.~~

~~22. The method of claim 21, wherein production of Th1-associated antibodies is stimulated.~~

~~23. The method of 21, wherein interferon gamma production is stimulated.~~

~~24. The method of claim 1, wherein the ISS comprises the sequence 5'-cytosine, guanine-3'.~~

~~25. The method of claim 24, wherein the ISS comprises the sequence 5'-TCG-3'.~~

~~26. The method of claim 24, wherein the ISS comprises the sequence 5'-purine, purine, C, G, pyrimidine, pyrimidine-3'.~~

~~27. The method of claim 26, wherein the ISS comprises the sequence 5'-AACGTT-3'.~~

~~28. The method of claim 26, wherein the ISS comprises the sequence 5'-purine, purine, C, G, pyrimidine, pyrimidine, C, C-3'.~~

~~29. The method of claim 26, wherein the ISS comprises the sequence 5'-purine, purine, C, G, pyrimidine, pyrimidine, C, G-3'.~~

30. The method of claim 26, wherein the ISS comprises a sequence selected from the group consisting of AACGTTCC, AACGTTTCG, GACGTTCC, and GACGTTTCG.

5 31. The method of claim 29, wherein the ISS comprises the sequence TGACTGTGAACGTTTCGAGATGA (SEQ ID NO:1).

32. The method of claim 1, wherein the individual is a mammal.

10 33. The method of claim 32, wherein the mammal is human.

34. A composition comprising an immunomodulatory polynucleotide comprising an ISS and a carrier molecule.

15 35. A composition comprising an immunomodulatory polynucleotide comprising an ISS proximately associated with a first antigen and further comprising a second antigen.

20 36. The composition of claim 35, wherein the immunomodulatory polynucleotide is proximately associated to first antigen by conjugation.

37. The composition of claim 35, wherein the first antigen is a viral conserved polypeptide and the second antigen is a viral variable polypeptide.

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